

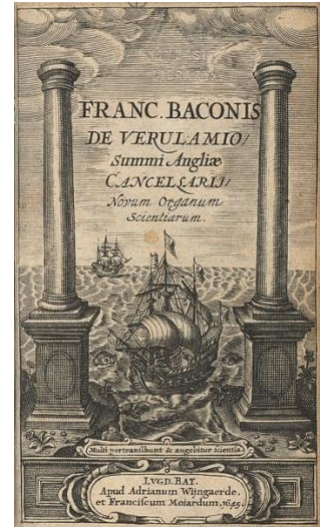
# Philosophy of Science

## Course information:

Course #:	PHIL 341
Term:	Fall 2024
Course pre-requisites:	None
Course schedule:	Tue/Thu 13:05-14:25
Course location:	LEA15

## Instructor information:

Name:	Dr. Oran Magal
Email:	<a href="mailto:oran.magal@mcgill.ca">oran.magal@mcgill.ca</a>
Office hours:	TBA
Office location:	TBA



## Description:

Science is a major force in shaping modern life and our society, and it is therefore crucial to understand what science is and what its methods are, as well as to evaluate claims often made on its behalf for a special kind of objectivity and unique standing with respect to politics and policy. The emphasis in this course will be on the relation between scientific theories and practices on one side and 'reality', however that is to be understood, on the other. Along the way we will consider in detail the role of models and modelling, the challenge of acknowledging multiple viewpoints while maintaining a concept of objectivity, and how to incorporate scientific *practices* and not only theories into our philosophical understanding of science. A detailed list of topics and readings is provided below.

## Required Background:

There are no prerequisites.

## Required Course Materials:

All required readings for the course will be available as an e-book through McGill's library or as PDF files on *MyCourses*. Optional readings will be suggested for students who wish to explore further.

## Instructional Method:

The course will be based on lecture and there will be no tutorial conferences. To succeed in the course, students should read the assigned readings for each week *before* coming to class. The classroom for this course does not include the possibility of lecture recording through McGill's system. I will do my

best to record all lectures for the benefit of students who are occasionally unable to attend, but please make an effort to attend all classes in person.

## Schedule of Topics and Readings

The required readings for each week are listed below. Optional readings will be posted on *MyCourses* for each topic for students who are interested in learning more. The following book, referred to below by its author's last name, is available as an e-book through the library:

Hasok Chang, *Realism for Realistic People: A New Pragmatist Philosophy of Science*, Cambridge University Press, 2022

Week	Dates	Topic	Readings + assignments
0	Th Aug 29 <sup>th</sup>	N/A	[Lost due to course scheduling issues]
1	Tue Sept 3 <sup>rd</sup> Thu Sept 5 <sup>th</sup>	A challenge to scientific realism	L. Laudan, "A Confutation of Convergent Realism"
2	Tue Sept 10 <sup>th</sup> Thu Sept 12 <sup>th</sup>	The "no miracles" argument for realism	J. R. Brown, "The Miracle of Science" (1982) Optional: Staley, Ch. 10: "Realism and anti-realism"
3	Tue Sept 17 <sup>th</sup> Thu Sept 19 <sup>th</sup>	The pessimistic meta-induction argument against realism	K. B. Wray, "Pessimistic Inductions: Four Varieties" (2015)
4	Tue Sept 24 <sup>th</sup> Thu Sept 26 <sup>th</sup>	Structural realism	J. Ladyman, "What is Structural Realism?" (1998)
5	Tue Oct 1 <sup>st</sup> Thu Oct 3 <sup>rd</sup>	Are we asking the right questions about realism and anti-realism?	H. Stein, "Yes, But... Some Skeptical Remarks on Realism and Anti-Realism" (1989)
6	Tue Oct 8 <sup>th</sup> Thu Oct 10 <sup>th</sup>	A Kantian approach to the question of realism	M. Massimi, "Structural Realism: A Neo-Kantian Perspective", in A. Bokulich (ed.), <i>Scientific Structuralism</i> , Springer 2011.
7	Tue Oct 22 <sup>nd</sup> Thu Oct 24 <sup>th</sup>	Realism about laws of nature: the case of biology	S. Mitchell, "Dimensions of Scientific Law" (2000)
8	Tue Oct 29 <sup>th</sup> Thu Oct 31 <sup>st</sup>	A pragmatist view of scientific realism	H. Chang, Intro pp. 1-11 + Ch. 1, pp. 12-27.
9	Tue Nov 5 <sup>th</sup> Thu Nov 7 <sup>th</sup>	A critique of 'Metaphysical Realism'	H. Chang, Ch. 2, pp. 70-77 and Ch. 3, pp. 119-131.
10	Tue Nov 12 <sup>th</sup> Thu Nov 14 <sup>th</sup>	A realism compatible with pluralism	Chang, Ch. 5, pp. 223-239 and 'Closing Remarks', pp. 252-255.
11	Tue Nov 19 <sup>th</sup>	Realism and 'social construction'	Hacking, I. 1999. <i>The Social Construction of</i>

	Thu Nov 21 <sup>st</sup>		<i>What?</i> Harvard University Press. Chapter 4: “Madness: biological or constructed?”
12	Tue Nov 26 <sup>th</sup> Thu Nov 28 <sup>th</sup>	On the relation between mathematics and nature	Mark Wilson (2000), “The Unreasonable Uncooperativeness of Mathematics in The Natural Sciences”
13	Tue Dec 3 <sup>rd</sup>	Concluding remarks	Final class of the course, no new readings.

## Means of Evaluation

The final grade in the course comprises the following (explanation below):

Assignment	Due date	% of final grade
Reading assignments	Throughout (best 5 out of 7)	50
Midterm (take-home)	Due Monday, Oct. 21 <sup>st</sup> (after reading week)	25
Final exam (take-home)	Due date during exam period, set by McGill	25

- **Reading assignments:** You will need to complete 5 out of 7 of the reading assignments that will be distributed on MyCourses throughout the term. (You are welcome to complete all seven, in which case the best five will be used to calculate your final mark.) Each reading assignment will be available at least one week before it is due. Please note that because the answer to the reading assignment will be discussed in class immediately after the due-date, late reading assignments will not be accepted. If there are special circumstances (e.g., being sick for more than one day, etc.), the instructor will assign an alternative reading assignment.
- **Take-home exams:** these will be distributed through MyCourses. The midterm will be given prior to the Reading Week break and due the Monday after this break. The final exam will be given at least 72 hours in advance, the exact due date to be determined by McGill’s office responsible for scheduling final exams.

## Policy on extensions and late work

If you have a valid reason to ask for an extension, please **write to me** ([oran.magal@mcgill.ca](mailto:oran.magal@mcgill.ca)) **before the relevant work is due**. As a rule, extensions will be given only for medical reasons or serious personal/family issues. Since the public health system is already overloaded, I will not ask you to provide a medical note, but I do require that you take responsibility to communicate with me in a timely manner.

## How to Submit Your Work

**Submitting work through MyCourses:** reading assignments and exam instructions will be distributed through MyCourses (in the ‘assignments’ tab of the course page), and students should submit their work only through MyCourses. Do not send your work by email to the instructor unless you are specifically asked to do so.

**Important:** Reading assignments will be submitted through MyCourses as plain text (there will be an input box for you to copy/paste your work from a word processor). Essays and revised essays can only be submitted through MyCourses as a PDF file. It may help to know that Microsoft Word (for PC or Mac) is provided to you for free through McGill and can generate PDF files (an option under 'save as'). If you are using any other software, simply use *export* or *save as* to save your work as a PDF prior to submitting it.

## McGill Policies and Statements

### Language of Submission

*In accord with McGill University's Charter of Students' Rights, students in this course have the right to submit in English or in French any written work that is to be graded. This does not apply to courses in which acquiring proficiency in a language is one of the objectives.*

*Conformément à la Charte des droits de l'étudiant de l'Université McGill, chaque étudiant a le droit de soumettre en français ou en anglais tout travail écrit devant être noté (sauf dans le cas des cours dont l'un des objets est la maîtrise d'une langue).*

### Academic Integrity

McGill University values academic integrity. Therefore, all students must understand the meaning and consequences of cheating, plagiarism and other academic offences under the Code of Student Conduct and Disciplinary Procedures. (see [www.mcgill.ca/students/srr/honest/](http://www.mcgill.ca/students/srr/honest/) for more information)

### Varia

Mobile computing and communications devices are permitted in class insofar as their use does not disrupt the teaching and learning process. Please do not record the lectures without instructor's permission.

Instructor-generated course materials (e.g., handouts, notes, summaries, exam questions, etc.) are protected by law and may not be copied or distributed in any form or in any medium without explicit permission of the instructor. Note that infringements of copyright can be subject to follow up by the University under the Code of Student Conduct and Disciplinary Procedures.

As the instructor of this course I endeavor to provide an inclusive learning environment. However, if you experience barriers to learning in this course, do not hesitate to discuss them with me and the [Office for Students with Disabilities](#), 514-398-6009.

McGill University is on land which has long served as a site of meeting and exchange amongst Indigenous peoples, including the Haudenosaunee and Anishinabeg nations. We acknowledge and thank the diverse Indigenous people whose footsteps have marked this territory on which peoples of the world now gather.